

Department of Water and Power



the City of Los Angeles

RICHARD J. RIORDAN
Mayor

Commission
RICK J. CARUSO, *President*
KENNETH T. LOMBARD, *Vice President*
JUDY M. MILLER
DOMINICK W. RUBALCAVA
MARCIA F. VOLPERT
JOHN C. BURMAHLN, *Secretary*

S. DAVID FREEMAN, *General Manager*

October 6, 1999

Ms. Ursula Kramer, Director
Division of Air Quality
Utah Department of Environmental Quality
P.O. Box 144820
Salt Lake City, Utah 84114-4820

Attention Nando Meli

Dear Ms. Kramer:

Notice of Intent to Test Burn Alternate Fuel

The Los Angeles Department of Water and Power (LADWP), Operating Agent for the Intermountain Power Project (IPP), is hereby submitting this Notice of Intent to test burn petroleum coke (Pet Coke) at the Intermountain Generating Station (IGS) located in Delta, Utah. LADWP is requesting an experimental approval order for this test burn. The IGS is a coal-fired, steam-electric plant located in Millard County. Specifically, Intermountain Power Service Corporation (IPSC) intends to trial burn Pet Coke to determine burn characteristics and performance parameters in preparation for possible future continuous use of this type of fuel. After this experimental fuel test, another Notice of Intent will be filed if it is decided to burn Pet Coke on a continuous or permanent basis.

As required by Utah Administrative Code R307-401-3, the following information is provided:

- (1) **PROCESS DESCRIPTION:** IGS is a fossil fuel fired steam-electric generating station that primarily uses coal as fuel for the production of steam to generate electricity. Under its permit, IGS is able to use both bituminous and subbituminous coals.

IGS has in place bulk handling equipment for the unloading, transfer, storage, preparation, and delivery of solid fuel to the boilers. No changes to this equipment are required or expected to handle Pet Coke. Coal and Pet Coke would be proportionately blended using present equipment and procedures.

With the proposed use of Pet Coke, slightly more limestone would be used for the removal of acid gases in the wet scrubbers. No significant changes in the usage of other raw materials or bulk chemicals are required or expected.

Water and Power Conservation... a way of life

111 North Hope Street, Los Angeles, California ☐ Mailing address: Box 51111, Los Angeles 90051-0100
Telephone: (213) 367-4211 Cable address: DEWAPOLA FAX: (213) 367-3287

Recyclable and made from recycled waste.

PROPOSAL: IGS would receive and experimentally burn several 100-car train loads of Pet Coke (about 10,000 tons per trainload) over a 45-day period at various blends. The average combustion rate would be 20 percent Pet Coke to 80 percent coal ratio based on thermal energy (rather than by weight). Pet Coke is a solid fossil fuel with higher thermal energy by weight than coal, which means less Pet Coke than coal is required for equal heat input. Pet Coke is derived from the petroleum refining process.

Comparisons of fuel characteristics (estimated) are described below.

Parameter (units)	FUEL TYPE (average estimates)		
	COAL	PETROLEUM COKE	BLENDED (80/20 CALCULATED)
Ash%	9.94	0.35	8.13
Sulfur (%)	0.54	3.23	1.11
Thermal (BTU/lb)	11,851	15,440	13,404
Chlorine (ppm)	330	185	300
Fluorine (ppm)	74	3	60
Mercury (ppm)	0.05	0.07	.054
Nickel (ppm)	5	484	101
Chromium (ppm)	28	3	23

NOTE: Data provided for Pet Coke are estimates only, based on available industry-wide information. These are not limits, but arithmetic means bounded by wide ranges of concentrations that are dependent on fuel source and type. Solid fuels naturally have wide variability in characteristics. Characteristics specific to the Pet Coke for the test burn at IGS would be determined by laboratory analysis of samples taken at delivery. The analysis will provide specific values for the constituents listed above, and also for other constituents that may be present.

- (2) With one exception, the expected composition and physical characteristics of emissions resulting from the use of petroleum coke as fuel are expected to be unchanged from present emission composition and characteristics with regard to emission rates, temperature, air contaminant types, and concentration of air contaminants. Petroleum coke has higher thermal energy per pound than coal, requiring less tonnage to be burned for comparable heat input. The mass flow of chimney effluent may change proportionately with the fuel usage and combustion air to meet comparable heat input. The pollution control devices (PCD) include a fabric filter and wet scrubber. The following emission rate parameters are provided as required.

Parameter	Before PCD	After PCD	Resulting Increase with Pet Coke Use*
Particulates	96,000 lbs/hr	50 lbs/hr	none
Nitrogen Oxides	0.41 lbs/mmBtu	0.41 lbs/mmBtu	none
Sulfur Dioxide	1.8 lbs/mmBtu	.15 lbs/mmBtu (permit limit)	unknown – none expected
Temperature	325 F	120 F	none
Volume	130,000,000 scfh	130,000,000 scfh	none
Hydrochloric Acid	0.67 lbs/ton	0.02 lbs/ton	none
Hydrofluoric Acid	0.14 lbs/ton	0.004 lbs/ton	none
Mercury	0.0001 lbs/ton	0.00005 lbs/ton	negligible
Nickel	0.2 lbs/ton	0.0003 lbs/ton	< 0.5 tons/yr
Chromium	0.05 lbs/ton	0.0001 lbs/ton	none

***NOTE:** Annualized estimates if a 20-percent Pet Coke blend was burned continuously year round.

- (3) Present pollution control equipment for combustion include dual register low NO_x burners, baghouse type fabric filters for particulate removal, and flue gas desulfurization scrubbers. Baghouse filters operate at normal 99.95 percent efficiency, wet scrubbers operate at nominal 90 percent efficiency. Control equipment for the handling and transfer of solid fuel include dust collection filters. No changes in the operation of the fabric filters are required or expected. Increased limestone utilization in the scrubbers will occur to maintain sulfur dioxide emissions within permit limits. Sulfur emissions are not expected to increase, based upon performance testing with high sulfur coal done during initial operation of IGS. However, even with an unexpected increase in emission rates for sulfur, permit conditions will not be exceeded.
- (4) The present emission points for the IGS boilers are dual lined chimney liners that discharge at 712 feet above ground level (5386 feet above sea level). The chimney location is 39° 39' 39" longitude, 112° 34' 46" latitude.
- (5) Emissions from boiler combustion are continuously sampled and monitored at the chimney liners for nitrogen oxides, sulfur oxides, carbon dioxide, and volumetric flow. Opacity is measured at the fabric filter outlet. Other emissions not directly monitored are calculated using emission factors based on fuel concentration. Other parameters monitored and recorded include heat input and production level (megawatt load). Monitoring and recording will remain unchanged.
- (6) Operation at IGS is 24 hours per day. There is no anticipated increase in capacity factor at IGS.

October 6, 1999

- (7) No construction will occur to accommodate alternate fuels for the trial burn. Approval for commencement of the proposed test burn is requested as soon as possible.
- (8) No other specifications or related information will be available until after the test burn and measurements.
- (9) IGS operates under a Title V permit (#2700010001). IPSC intends to operate in full compliance with that permit and applicable requirements during the proposed test burn. No deviations from permit conditions are expected.

Applicability Determinations

New Source Performance Standards. IGS operates as a New Source Performance Standard (NSPS) power plant, regulated under Title 40 of the Code of Federal Regulations, Part 60, Subpart Da. We believe that the use of Pet Coke as an alternate fuel does not constitute a modification under 40CFR60(Da). A modification is defined at 40 CFR 60.14 to include any change in operation of a source which increases the maximum hourly emissions of a Part 60 regulated pollutant above the maximum during the previous five years. [See 40 CFR 60.14(h).]

Prevention of Significant Deterioration. We anticipate that the use of Pet Coke as an alternate fuel will not constitute a major modification under 40 CFR Part 52.21 for the following reasons:

- We anticipate that there will be no significant net increase in actual emissions as there will be no significant increase in emissions nor any increase in capacity factor.
- The IGS units are capable of accommodating a blend of Pet Coke and coal.
- The use of Pet Coke blended with coal will be for trial test burns.

Should you require further information to expedite the approval of this request, please contact Ms. Jodean Giese at (213) 367-0409.

Sincerely,



MICHAEL J. NOSANOV
Operating Agent

c: Mr. S. Gale Chapman,
Intermountain Power Service Corp.
Mr. Lance C. Lee
Intermountain Power Agency
Ms. Jodean Giese

Petroleum Coke Test Burn Plan

Purpose:

The purpose of this test is to determine the preliminary feasibility of burning a low percentage of petroleum coke as a boiler fuel. The short duration of this test will only allow for a preliminary feasibility test of the blending, handling and combustion. A longer duration test will be required at a later date to check for other characteristics.

General Description:

One unit train (approx. 9100 tons) of pet coke will be used during the test. The pet coke will be burned in only one unit (Unit 1) at approximately 20% blend. Blending of the pet coke with the coal will be done in the active reclaim area using the rotary plow feeders. The coal-pet coke blend will be burned on all burner rows. On the first day of the test, only an amount equivalent to four hours of combustion will be sent up to the unit. This will allow the units time to recover in the event major problems with combustion occur. On the second day, an amount equal to eight hours of combustion will be sent up to the unit and on the third day it will be sent up for full time combustion until the shipment is consumed.

Test Termination:

The test will be terminated if any of the following occurs:

- Failure to maintain permitted stack air quality requirements
- Pulverizer or burner line fires
- Excessive boiler slagging or fouling
- Excessive burner flame instability
- Coal feeder chute or silo plugging
- Excessive mill capacity problems
- All pet coke is burned
- Any other problems that might affect generation

If the test is terminated for any of these reasons, the feeding of pet coke to the unit will stop and a new test plan will be developed. The pet coke remaining in the unit silos at the time the test is terminated should be burned in the boiler in the best way possible.

Pet Coke Delivery and Storage:

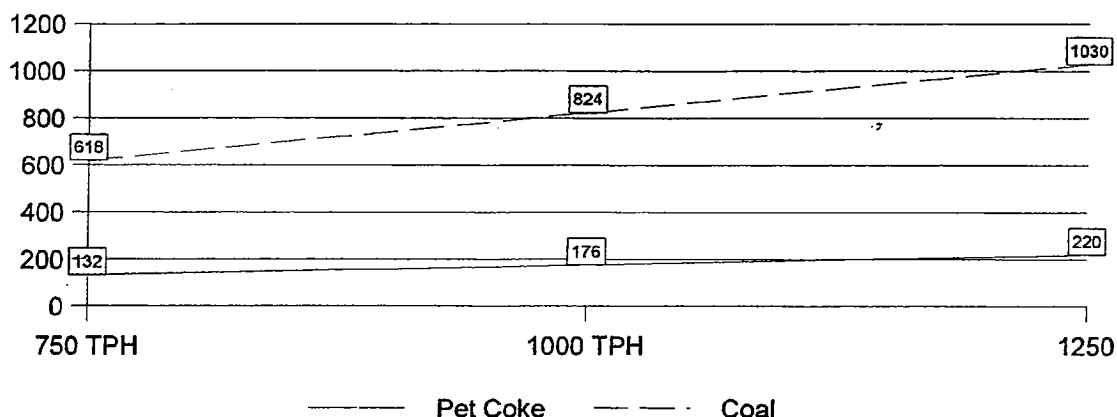
The pet coke will be received by bottom dump unit train and should be unloaded in the same manner as coal. The train should be sampled with the as-received sampling system. No pet coke should be sent directly to the units at the time of unloading. The pet coke should be stacked on the south end of the reclaim tunnel over Zone 4 (RPF 7D). This zone should be cleared of coal to its natural angle of repose prior to receiving the shipment of pet coke. The Modicon program for active reclaim will be temporarily modified to prevent reclaiming pet coke from Zone 4 until the test burn.

Reclaim and Blending:

Since this test will only be done only on Unit 1, care should be taken to insure that pet

Pet Coke Blending Rates

(17.6% Pet Coke by Weight)



coke does not go to Unit 2. RPF 7D should be used to reclaim the pet coke and either RPF 7A or 7B to reclaim the coal. The above graph can be used to determine the proper feed rate for each. The blending should start by establishing coal flow to the appropriate tonnage and then adding pet coke until the desired total tonnage is achieved. This will insure that the percentage of pet coke is not exceeded. RPF 7D will be temporarily modified to allow flow rates down to approximately 150 TPH.

For day one of the test, the Operator should run approximately 1200 tons of blended coal-pet coke to Unit 1. This will take about one hour and 12 minutes at 1000 TPH. The silo fill operation should be operated in timed mode to levelize the amount of pet coke to each silo. No effort should be made to equalize silo levels before the test, the main purpose of day one is to witness the effect of the blend on the pulverizers and burners. This can be done on an individual silo basis. After the blended coal is sent to the silos, the operator can fill the remaining portion of the silos with coal as normal.

For day two, the Operator should send approximately 2400 tons of blended coal to Unit 1. This will take about 2 hours and 24 minutes at 1000 TPH. Everything else should be the same as day one.

For day three and thereafter, the Operator should send the blended mix to Unit 1 as they would under normal operation. The pet coke should last approximately six days (total test time of eight days) before it is totally burned.

Unit Operation:

Unit 1 should be operated base loaded and at maximum capacity as much as possible but, may be left in AGC control. Testing at lower loads will be done at a later date if this test is successful. Based on conversations with other utilities, major changes to boiler operations are not expected. Excess air requirements, burner adjustments and sootblowing should remain about the same. Sometime during the test, it would be

beneficial to stop and start a pulverizer that is currently burning pet coke blend to determine how well the mixture ignites. The following results may be seen as a result of burning pet coke:

- Flyash LOI's will probably increase
- CO emissions may increase slightly
- SO2 emissions will almost double, pet coke is very high in sulfur (4%)
- Boiler slagging and fouling should remain about the same
- Ash production will decrease by 20%

AQCS Operation:

Our existing requirement for SO2 emissions is 0.15 lbs/MBTU. Last year the average SO2 emissions was 0.07 Lbs/MBTU. The addition of the pet coke will double the amount of SO2 entering the scrubber. Based on our current performance we should still be able to remain below our regulatory requirement. Even if we exceed the limit slightly for significant periods of the test, we will still remain in compliance because it is calculated on a 30 day rolling average basis. Because of the higher SO2 concentration entering the scrubber, the following changes to scrubber operation should be expected:

- Limestone consumption will increase
- Recovered water addition to the modules will increase to control density
- Scrubber sump pump flow will increase
- More sludge will be processed in sludge conditioning

Test Measurements and Samples:

A detailed list of samples and measurements that should be recorded during the test will be developed later.